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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,486	02/04/2002	Hiroshi Tayanaka	9792909-5361	8202

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EXAMINER	
DUONG, KHANH B	
ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 04/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/067,486	TAYANAKA, HIROSHI	
	Examiner	Art Unit	
	Khanh Duong	2822	

-- Th MAILING DATE of this communication app ars on th cover sheet with th correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 June 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *09/217,907* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

This Office Action is in response to the Preliminary Amendment filed on June 11, 2002.

Accordingly, claims 1-17 were canceled.

Currently, claims 18-33 are pending in the application.

Specification

The abstract of the disclosure is objected to because of the term "comprises". Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Drawings

The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Under 37 CFR 1.81, applicant is required to furnish Figure 22, as described in the specification, page 11, lines 14-16. No new matter may be introduced in the required drawing.

deleted in Pre-Amdt

Claim Objections

Claim 20 is objected to because of the following informalities: line 3, "is" should be --are--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 18-23, 26-29 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Sato et al. (US 5,854,123).

Re claims 18, 22, 26-29 and 32, Sato et al. discloses a method for making a semiconductor substrate (see FIGs. 4A-4E; cols. 18-20) comprising: a variant layer forming step for forming a variant impurity layer (GaAs) 44 with an impurity concentration varying in the depth direction on one surface of a supporting substrate 45; a porous layer forming step for forming a porous layer by providing pores in the variant impurity layer 44 by anodic oxidation so that the porosity in the porous layer varies in the depth direction; forming a semiconductive thin film (GaAs) 41 of a single crystal by epitaxial growth on the surface of the porous layer; heating

the porous layer for recrystallization; and separating the semiconductor thin film 41 from the supporting substrate 45 by cleavage in the porous phase.

Re claims 19-21 and 23, since Sato et al. discloses at column 18, lines 62-67 that the desired depth of ion implantation is a function of impurity concentration and acceleration energy, it must be inherent that the variant impurity layer includes sublayers having different impurity concentrations are formed in the variant layer forming step, and a porous layer including at least two sublayers having different porosities is formed in the porous layer forming step.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 24, 30, 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (US 5,854,123).

Sato et al. discloses a method for making a semiconductor substrate previously as described, which method is repeated herein.

Re claims 24, 30, 31 and 33, Sato et al. fails to disclose a variant impurity layer having specific ranges of impurity concentration as claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Sato et al. by selecting such specific ranges of impurity concentration as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (US 5,854,123) in view of Mano (JP 356054078A).

Re claim 25, Sato et al. fails to show one surface of the supporting substrate being uneven.

Mano teaches in the English Abstract to form semiconductor thin films on a supporting substrate having an uneven surface.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Sato et al. with the teaching of Mano, since Mano states in the English Abstract that such modification would provide a solar battery.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sakaguchi et al. '229 and Sato et al. '628 disclose relevant methods for forming a semiconductor substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Duong whose telephone number is (703) 305-1784. The examiner can normally be reached on Monday - Friday (9:00 AM - 6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian, can be reached on (703) 308-4905. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

KBD
April 2, 2003

AMIR ZARABIAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800